

Training Seminar: 2010 Off-road Diesel Vehicle Regulation for Large Fleets



**February 10, 2010
Sacramento, CA**

California Environmental Protection Agency

Air Resources Board



Outline

- Review 2010 Requirements
- Reduced Horsepower and Activity Credit
- 2010 Compliance Summary
- BACT Changes
- Fleet Average Calculator
- Retrofit Visibility and Exemptions



Review 2010 Requirements



Regulation Status

- Off-road regulation not delayed
- July 2009 amendments grant significant relief to fleets impacted by recession
 - Two year credit if activity or fleet size down $\geq 32\%$
- Updates to Board in April and July 2010

Current Requirements

- Reporting and Labeling
- Cannot Buy Tier 0 Vehicles
 - After March 1, 2010, if a large fleet does not meet fleet averages, must be Tier 2 or better
- Idling Restriction and Idling Policy
- Disclosure with Vehicle Sales

Regulation Background

By March 1, 2010, large fleets must:

- Meet the fleet average for NO_x,
or
- Turn over 8% of fleet horsepower (or use credits)

- Meet the fleet average for PM
or
- Retrofit 20% of fleet horsepower (or use credits)

Fleet Averages

Calculated in DOORS, fleet average calculators, alternate compliance planning tools

| Target Year | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|--------------------|------|------|------|------|------|------|
| Nox Target | 0.0 | 6.8 | 6.4 | 6.1 | 5.7 | 5.3 |
| Nox Average (2009) | 6.6 | | | | | |
| PM Target | 0.00 | 0.27 | 0.27 | 0.22 | 0.22 | 0.20 |
| PM Average (2009) | 0.37 | | | | | |

BACT: NOx and PM

NOx BACT: Turnover

- Sell / Retire (or Replace)
- Repower
- Verified NOx retrofits,
- Designate permanent low use

PM BACT

- Level 2 or 3 retrofits (currently all verified retrofits are level 3)
- Tier 0 retirements in shrinking fleet

Additional Provisions

- Alternative fuels
- Electric vehicles
- Delay Tier 1 turnover to 2013
- Yearly low-use designation
- Specialty vehicles
- Adding vehicle requirements

Reduced Horsepower



Reduced Horsepower Credit

- If total fleet horsepower reduced from March 1, 2006, to March 1, 2010, credit is granted for the difference.

Example: A fleet has 10,000 horsepower on March 1, 2006, and has 7,000 horsepower on March 1, 2010.

$$10,000 - 7,000 = 3,000 \text{ Hp Credit}$$

Reduced Horsepower Credit

- Credit applied to both NOx (turnover requirements) and PM (retrofit requirements)
- Credit does not expire (lasts until used)
- Age or Tier of vehicles retired does not affect credit

Reporting Reduced Horsepower

Include all vehicles the fleet owned since March 1, 2006, in the fleet report in DOORS

| Line # | EIN | Veh serial num | Your veh num | Type | Manufacturer |
|--------|-----|----------------|--------------|-----------------|--------------|
| 10 | | | | Bore/Drill Rigs | A&L |

| Edit | Delete | Sell/Retire | Line # | EIN | Veh serial num | Your veh num | Type | Veh Manufacturer | Veh Model | Veh MY | Purchase |
|----------------------|------------------------|-----------------------------|--------|---------------------|----------------|------------------------------|----------------------|------------------|-----------|------------------------|--------------------------|
| Edit | Delete | Sell/Retire | 9 | KM0A87 | siudhr89479uh | 29348 | Bore/Drill Rigs | A&L | 23423423 | 2009 | 1986-0 |
| Edit | Delete | Sell/Retire | 8 | HL5B79 | 345345345ogb | 4345 | Skid Steer Loaders | A&L | 869NA005 | 2003 | 1999-0 |
| Edit | Delete | Sell/Retire | 7 | MA8H35 | 7898jlooooo | 4345 | Skid Steer Loaders | A&L | 869NA005 | 2003 | 1999-0 |

Reporting Reduced Horsepower

Sell/Retire all of the vehicles no longer in the fleet.

| Edit | Delete | Sell/Retire | Line # | <u>EIN</u> |
|-------------|---------------|--------------------|--------|------------|
| <u>Edit</u> | <u>Delete</u> | <u>Sell/Retire</u> | 8 | SE4F95 |
| <u>Edit</u> | <u>Delete</u> | <u>Sell/Retire</u> | 7 | SR8T44 |

Sold vehicles will be shown below the others, in grey.

www.arb.ca.gov/msprog/ordiesel/documents/doors/retiredorsold.pdf

Reduced Activity



Reduced Activity

- Compare fleet activity from the period **January 1, 2007 to December 31, 2007**, to the period **March 1, 2009 to February 28, 2010**

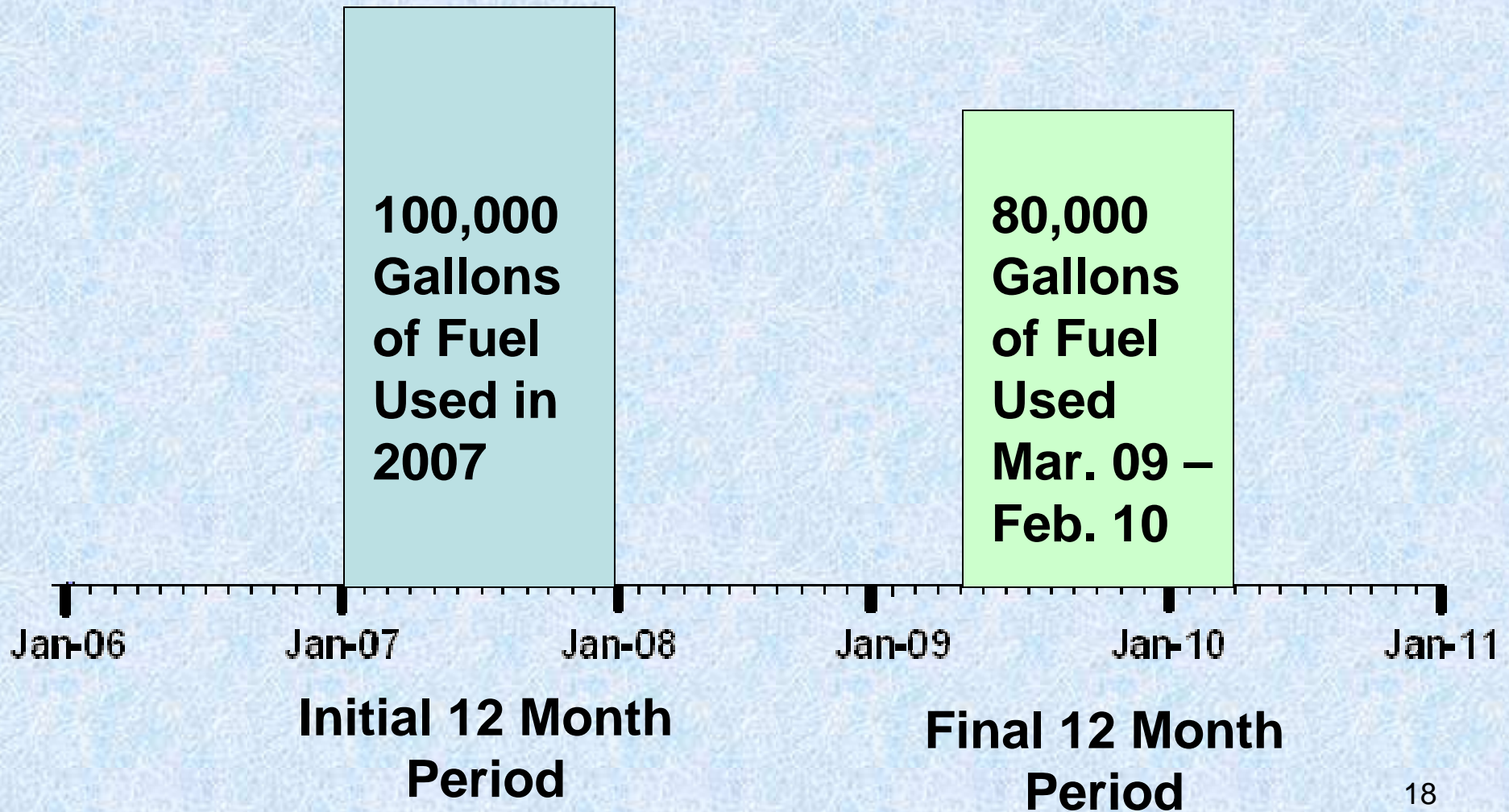
Example: My fleet worked 20 percent less between March 2009 to February 2010 than I did in all of 2007. My fleet on July 1, 2007, was 10,000 hp. I get

$$\underline{20\% \times 10,000 \text{ Hp} = 2,000 \text{ Hp Credit}}$$

Reduced Activity Credit

- Credit applied to both NOx (turnover requirements) and PM (retrofit requirements)
- Good for 2010 and 2011 requirements only (unused credit expires if not used in 2011).
- Percent reduction in activity multiplied by July 1, 2007, horsepower

Reduced Activity Timeline



Uncapped Reduced Activity Indicators

- **Vehicle hours**
 - Records for 95% of the fleet or more (by Hp)
 - Weighted by horsepower
- **Off-road Diesel Fuel Use**
 - Red dye diesel use
 - May include regular diesel if claimed for tax credit
- **Operating Engineer Hours Paid**

Capped Reduced Activity Indicators

Records capped at 20% credit:

- **Total employment**
 - Records of overall employment by the agency or company
- **Production Information**
 - Tons mined, flights ran, acres cleared, etc.
- **Business Revenue**

Reporting Reduced Activity

Three Steps

1. Online in DOORS
2. Complete ARB forms
3. Mail in ARB form with fleet records

<http://www.arb.ca.gov/msprog/ordiesel/activity.htm>

Reporting Reduced Activity: Online

Hours of operation:

| Model | MY | 2007 Hours | 2010 Hours |
|-------|------|------------|------------|
| 350G | 2002 | 476 | 351 |
| 456 | 2009 | 176 | 158 |
| 140G | 1981 | 190 | 205 |

Reporting Reduced Activity: Online

Alternate Indicators


Uncapped or Capped

- ☒ Off-road Diesel Fuel Use
- ☐ Total Vehicle
Operator Hours Paid

- ☐ Revenue
- ☐ Total Number of employee
- ☐ Production
- ☐ Other (Specify Below)

Reporting Reduced Activity Forms

Complete ARB form, and include fleet records (paper and/or electronic)

 **AIR RESOURCES BOARD** Reduced Activity Records Application
Fleet Information Form / Cover Sheet

To submit a request for Reduced Activity/Credit, please fill out this form and attach the applicable forms:

Reduced Activity Credit Summary Sheet from DOORS and
Reduced Activity Indicator Records: Only one of sections (A) through (G)

Then send your written request to:

Off-road Diesel Vehicle Registration
Reduced Activity Records Application
Floor 7, MODO
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

Responsible Party and Contact Information

Please fill out all the fields below. Failure to fill out this page in its entirety may result in a rejected application, and a delay in receiving reduced activity/credit.

| | |
|---|------------------|
| Company / Agency Name | |
| DOORS ID Number | |
| Fleet Owner / Manager | |
| Contact Phone Number | |
| Contact Email | |
| <div style="border: 1px solid black; padding: 2px;">Mailing Address</div> | Name |
| | Address 1 |
| | Address 2 |
| | City, State, Zip |



<http://www.arb.ca.gov/msprog/ordiesel/activity.htm>

What Fleet Records are Required?

- Hour meter logs, vehicle tracking software
- Payroll records, tax records for employees
- Fuel receipts, tax records for fuel
- Revenue from tax receipts
- Shipping records for goods / services
- Production / services records

Low Use Vehicles



Low Use Vehicles Must Choose:

- **Year by year**

- Drop out of fleet horsepower / averages
- Enter hours for 12 months prior to March 1, 2010 (or 36 months prior)
- No credits to PM or NOx, just lower requirements

- **Designate permanent low use**

- Vehicle will always be low use in the future
- Enter current hour meter (but not previous)
- Credit towards NOx (turnover credit)

Reporting Low Use

| Not Low Use | Year to Year | Year to Year Outside | Designated | Designated Outside | EIN |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------|---------------------|
| <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | AN8D86 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | gN4G66 |
| <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | GY9X45 |
| <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | HA3T95 |
| <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | HL5B79 |

Inputting Hour Meter Records

| Low Use Type | EIN | 2007 | 2009 | 2010 | CA Total |
|-------------------------|---------------------|------|------|------|----------|
| Year to Year | AU7Y86 | 3410 | | 3610 | |
| Designated | DL3H95 | | | 8910 | |
| Year to Year Outside | GX7W84 | | 3000 | 3450 | 75 |

<http://www.arb.ca.gov/msprog/ordiesel/faq/faqlowuse.pdf>

2010 Compliance Summary

Fleet is not 2010 Compliant

Fleet must: Turnover 5,978 Hp or meet the NOx fleet average.
May be met with [early credit](#) or [vehicle turnover](#)

Fleet Size:
First Compliance Date:
Requirements:

Large
March 1, 2010
NOx and PM

| | |
|-------------------------------|----------------|
| 2010 NOx Requirements: | Not Met |
| Nox Fleet Average: | Not Met |
| Nox BACT Requirements: | Not Met |
| Required BACT Turnover: | 10,474 Hp |
| (8% of Fleet Horsepower) | |
| Current Turnover Credit: | 4,496 Hp |

| | |
|------------------------------|------------|
| 2010 PM Requirements: | Met |
| PM Fleet Average: | Not Met |
| PM BACT Requirements: | Met |
| Required BACT Retrofits: | 26,186 Hp |
| (20% of Fleet Horsepower) | |
| Current Retrofit Credit: | 42,972 Hp |

Turnover Requirements: 5,978 Hp
If you meet the fleet average before accruing this turnover, you have met the 2010 requirements.
For more information on accumulating turnover credit see the [2010 guided to compliance](#) or the [early credit guide](#)

Carryover PM Credit: 16,786 Hp
Carryover credit is applied to 2011 requirements
Unused Reduced Activity Credit expires if not used in 2010 or 2011.

Compliance Summary

- Official status of the fleet vs. 2010 requirements
- Fleet averages, credits, size, dates
- 2010 only, no future dates
- Released to calculate a single DOORS ID compliance status initially
- Subfleets included in the future

Compliance Summary

Fleet is not 2010 Compliant

Fleet must: Turnover 5,978 Hp or meet the NOx fleet average.

Summary: compliant or not?

Brief summary of outstanding requirements
(if any)

Compliance: NOx

| | |
|---|------------|
| 2010 NOx Requirements: | Met |
| Nox Fleet Average: | Met |
| Nox BACT Requirements: | NA |
| Required BACT Turnover: (8% of Fleet Horsepower) | 2,112 Hp |
| Current Turnover Credit: | 0 Hp |

NOx BACT Credits

Nox Credit

| | |
|-----------------------|---------------|
| 2006-2010 Retirement: | 391 |
| Reduced Activity: | 6,401 |
| Early Replacement: | 0 |
| Repowers | 4,931 |
| 2009-2010 Turnover: | 0 |
| Total: | 11,724 |

Fleets Not in Compliance

1. Check credits / dates reported in DOORS
2. Double check credits reported in DOORS
3. Determine distance from fleet averages
4. Determine required turnover/retrofit requirements

Fleets Not in Compliance

5. NOx BACT: Turnover

- Tier 0 vehicles
 - Retire / Replace / Repower
 - Designate permanent low use
 - NOx retrofit by March 1
- No turnover required for Tier 1 or better until after March 1, 2012

Fleets Not in Compliance

6. PM BACT: Retrofit

- Install retrofits by March 1, 2010
- Retire any vehicles to reduce March 1, 2010 total hp from March 1, 2006
- Retire Tier 0s to reduce March 1, 2010 total hp from March 1, 2009

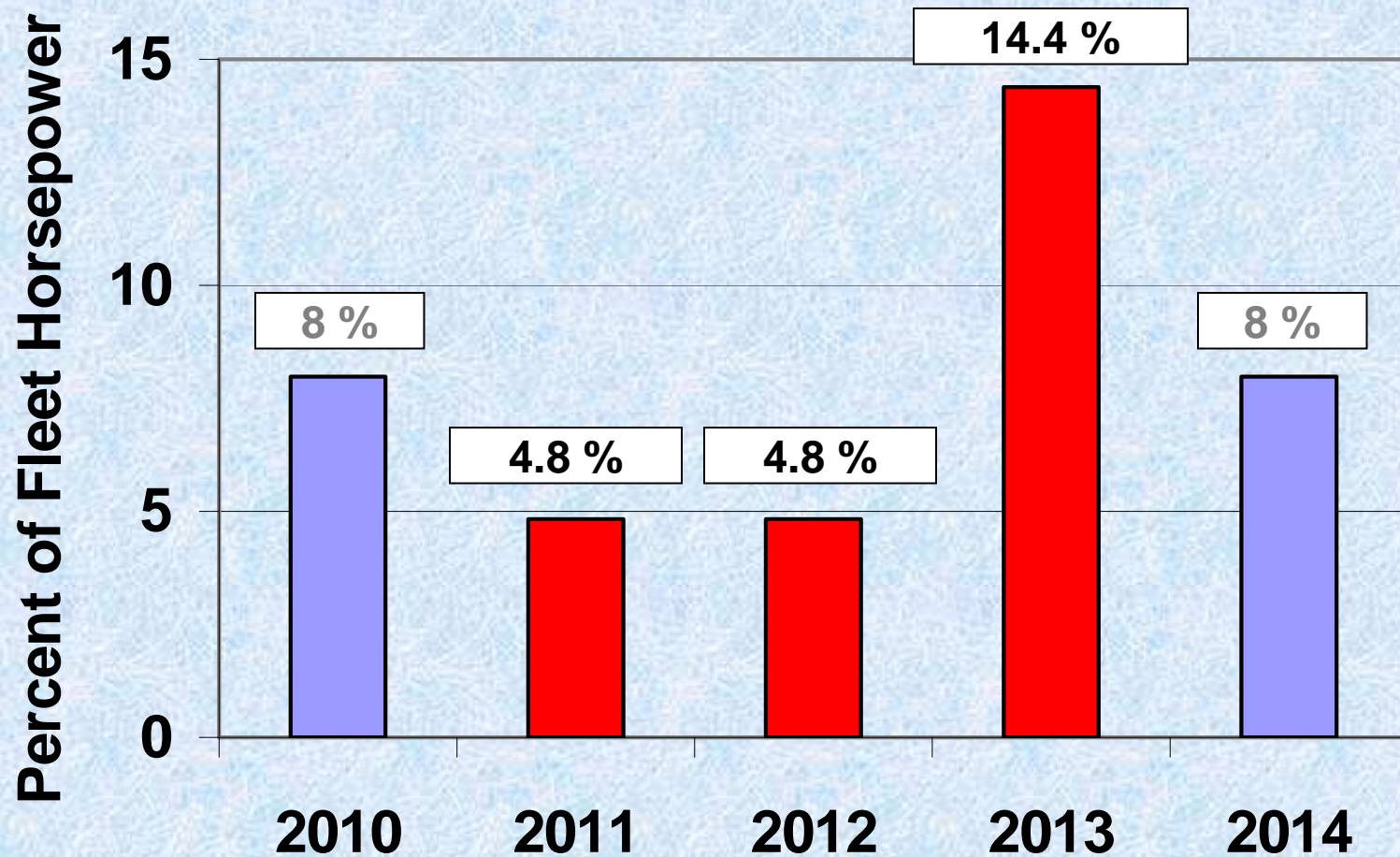
BACT Changes 2011-2013



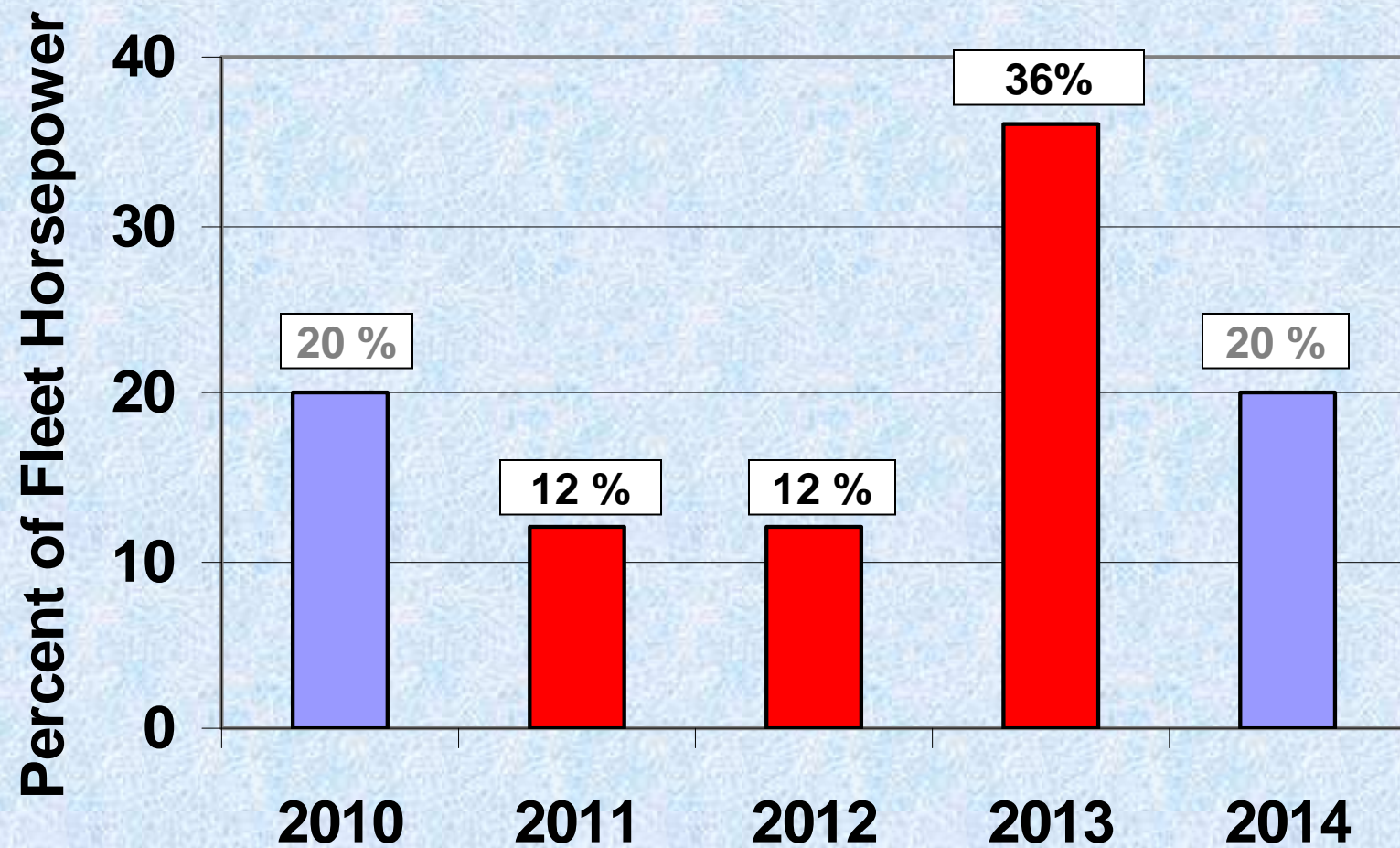
BACT Schedule Changes

- Amendment modifies 2011 to 2013 requirements. Effectively:
 - 2011: Reduce requirements by 40%
 - 2012: Reduce requirements by 40%
 - 2013: Increase requirements by 80%

Turnover Requirements



Retrofit Requirements



BACT Changes: Exemptions

- Fleets meeting the fleet averages in 2011 or 2012 and medium fleets will not have their overall requirements increased.
- Example:
 - A fleet that meets the fleet averages in 2012 will not benefit from the amendments, and therefore would not have increased BACT requirements in 2013.

Fleet Average Calculator

- Compliance planning in Excel based tool
- Independent from DOORS

| Equipment Name (Optional) | Hours of Operation | Engine Model Year | Horsepower |
|------------------------------|-----------------------|----------------------|------------|
| 1 | 340 | 1995 | 334 |
| 2 | 335 | 1992 | 452 |
| 3 | 190 | 1999 | 239 |
| 4 | 1190 | 2004 | 125 |
| 5 | 150 | 2000 | 200 |

Compliance Scenarios

| | |
|---|--------------|
| Early Reduced Horsepower Credit = | 2431 |
| Reduced Activity Credit | 1209 |
| Early Repower, H0x Retrofit Credit Earned through 2009 (hp): | 120.0 |
| Early PM VDECS Credit Earned through 2009 (hp): | 298.0 |

- Enter a number of different scenarios
- Determine the best / easiest way to comply

| | | | |
|------------------------------------|---------------|-----------------------------|--------------|
| NOx Requirements Fulfilled? | | YES | |
| Current Hp Turnover = | 3339.9 | Needed Hp Turnover = | 493.0 |

Extended Compliance Planning

- Plan for 2011 to 2020 compliance requirements

2011

2012

2013

2014...

| Before taken on foot between March 1, 2010 and March 1, 2011 | | | | | | | | | | | | | | | | | |
|--|--|--|--|----|--|-------------------------|--|----|--|----|--|--|--|--|--|--|--|
| | | | | Rg | | Pg | | Rg | | Pg | | | | | | | |
| | | | | Rg | | Pg | | Rg | | Pg | | | | | | | |
| | | | | Rg | | Pg | | Rg | | Pg | | | | | | | |
| II - COMPLIANCE | | | | | | | | | | | | | | | | | |
| Rg Requirements Fulfill | | | | | | Pg Requirements Fulfill | | | | | | | | | | | |
| Rg Requirements n. 1 | | | | | | Pg Requirements n. 1 | | | | | | | | | | | |
| Rg Requirements n. 2 | | | | | | Pg Requirements n. 2 | | | | | | | | | | | |
| Rg Requirements n. 3 | | | | | | Pg Requirements n. 3 | | | | | | | | | | | |
| Rg Requirements n. 4 | | | | | | Pg Requirements n. 4 | | | | | | | | | | | |
| Rg Requirements n. 5 | | | | | | Pg Requirements n. 5 | | | | | | | | | | | |
| Rg Requirements n. 6 | | | | | | Pg Requirements n. 6 | | | | | | | | | | | |
| Rg Requirements n. 7 | | | | | | Pg Requirements n. 7 | | | | | | | | | | | |
| Rg Requirements n. 8 | | | | | | Pg Requirements n. 8 | | | | | | | | | | | |
| Rg Requirements n. 9 | | | | | | Pg Requirements n. 9 | | | | | | | | | | | |
| Rg Requirements n. 10 | | | | | | Pg Requirements n. 10 | | | | | | | | | | | |
| Rg Requirements n. 11 | | | | | | Pg Requirements n. 11 | | | | | | | | | | | |
| Rg Requirements n. 12 | | | | | | Pg Requirements n. 12 | | | | | | | | | | | |
| Rg Requirements n. 13 | | | | | | Pg Requirements n. 13 | | | | | | | | | | | |
| Rg Requirements n. 14 | | | | | | Pg Requirements n. 14 | | | | | | | | | | | |
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| Rg Requirements n. 16 | | | | | | Pg Requirements n. 16 | | | | | | | | | | | |
| Rg Requirements n. 17 | | | | | | Pg Requirements n. 17 | | | | | | | | | | | |
| Rg Requirements n. 18 | | | | | | Pg Requirements n. 18 | | | | | | | | | | | |
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| Rg Requirements n. 25 | | | | | | Pg Requirements n. 25 | | | | | | | | | | | |
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| Rg Requirements n. 59 | | | | | | Pg Requirements n. 59 | | | | | | | | | | | |
| Rg Requirements n. 60 | | | | | | Pg Requirements n. 60 | | | | | | | | | | | |
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| Rg Requirements n. 68 | | | | | | Pg Requirements n. 68 | | | | | | | | | | | |
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| Rg Requirements n. 82 | | | | | | Pg Requirements n. 82 | | | | | | | | | | | |
| Rg Requirements n. 83 | | | | | | Pg Requirements n. 83 | | | | | | | | | | | |
| Rg Requirements n. 84 | | | | | | Pg Requirements n. 84 | | | | | | | | | | | |
| Rg Requirements n. 85 | | | | | | Pg Requirements n. 85 | | | | | | | | | | | |
| Rg Requirements n. 86 | | | | | | Pg Requirements n. 86 | | | | | | | | | | | |
| Rg Requirements n. 87 | | | | | | Pg Requirements n. 87 | | | | | | | | | | | |

Retrofit Visibility



Interim Visibility Policy

- The regulation exempts vehicles from retrofitting where a retrofit would be unsafe
- CalOSHA is considering a standard for retrofit visibility (late 2010 or 2011)
- To prevent installs now that would later violate CalOSHA standards, ARB will exempt vehicles that cannot be retrofit without impacting visibility
- See Interim Visibility Policy at <http://www.arb.ca.gov/msprog/ordiesel/documents/interim%20vis%20policy.pdf>

2010 Retrofit Requirements

- For 2010 requirements, select vehicles to retrofit where the retrofit does not block operator visibility
- If no vehicles in the fleet can be retrofit without blocking operator visibility, the fleet will be temporarily exempt from retrofit requirements

Operator Visibility

- Visibility defined by an operator of average height and weight, looking in any direction around a vehicle
- Retrofit installation should not block their view of surroundings in any direction

Installations that Create Masking



Installations that Create Masking 2



Installations without Masking



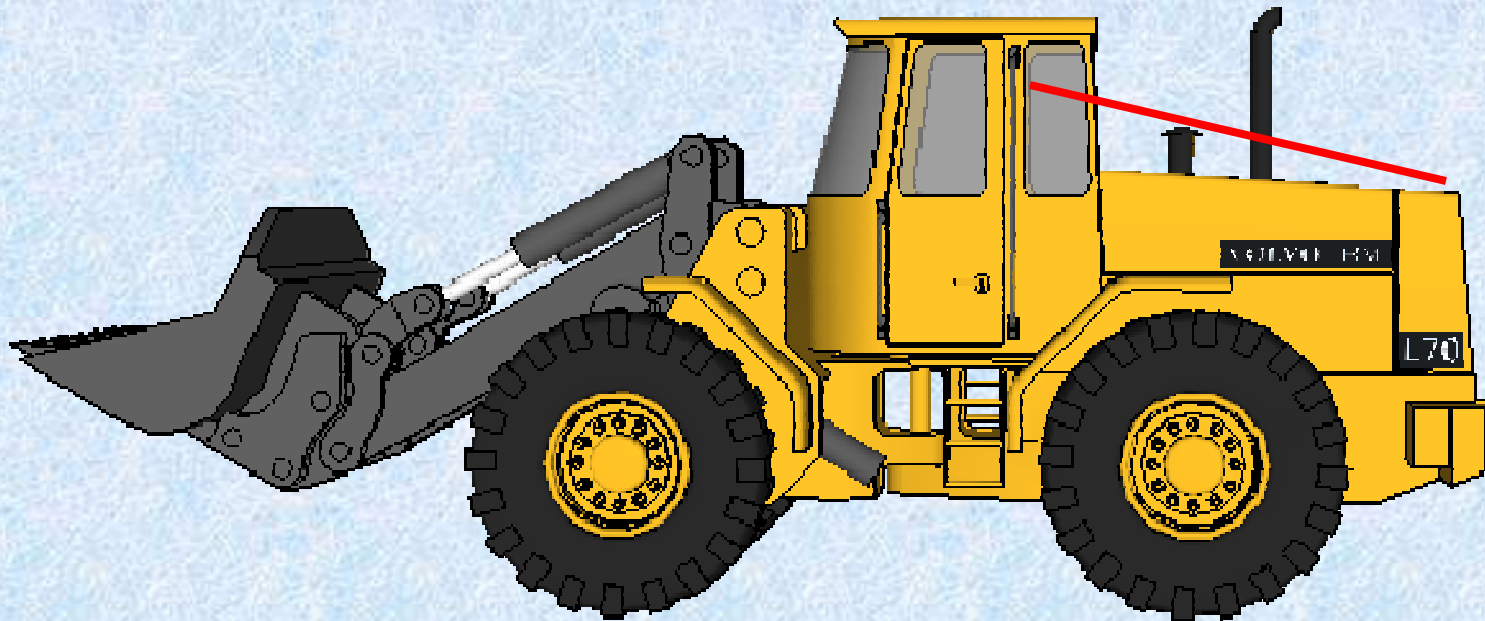
<http://www.arb.ca.gov/msprog/ordiesel/vdecssafety.htm>

Installations without Masking 2



Determining Visibility

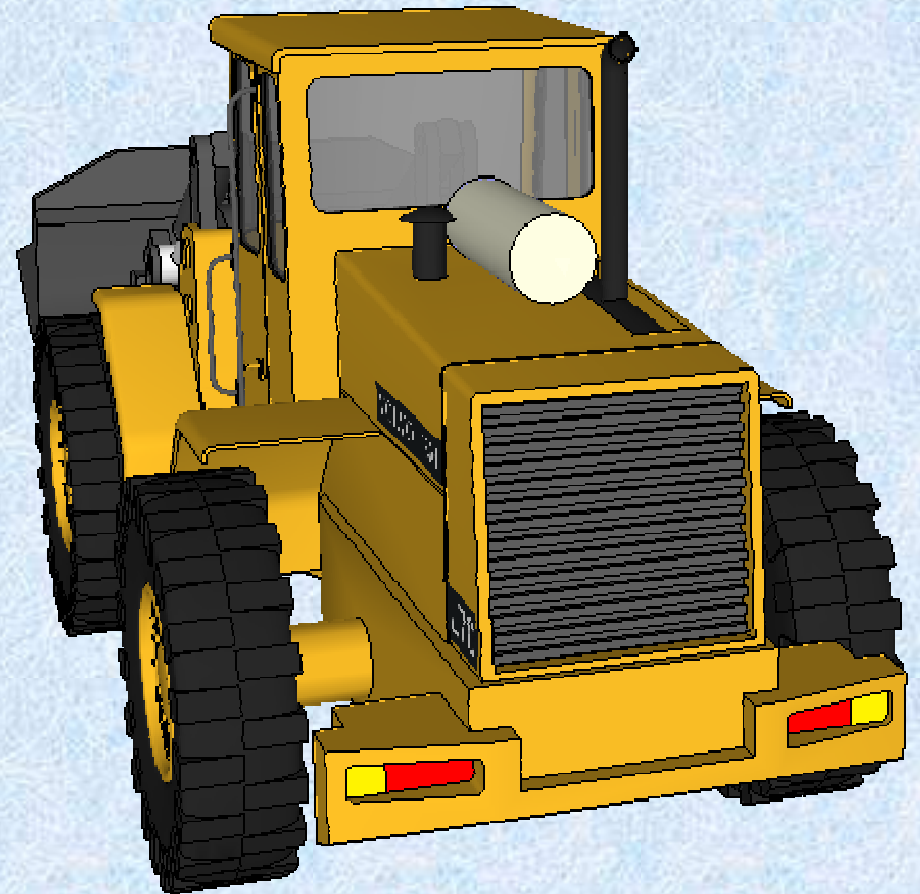
- For cases that are unclear, use the guide at www.arb.ca.gov/msprog/ordiesel/vdecssafety.htm



Using the Operator Eye-point

The guide provides a consistent, repeatable method to test a vehicle before retrofitting.

1. Center the seat
2. Define seat
Compression
3. Use standard seated
height



Claiming an Exemption

- Follow exemption guide and application
- Submit paperwork to ARB

Vehicle Profile



Engine Compartment Profile



Rear Views of the Vehicle



Top View of Engine Compartment



Engine compartment with access doors open



Dimensions of engine components, specifically any muffler components

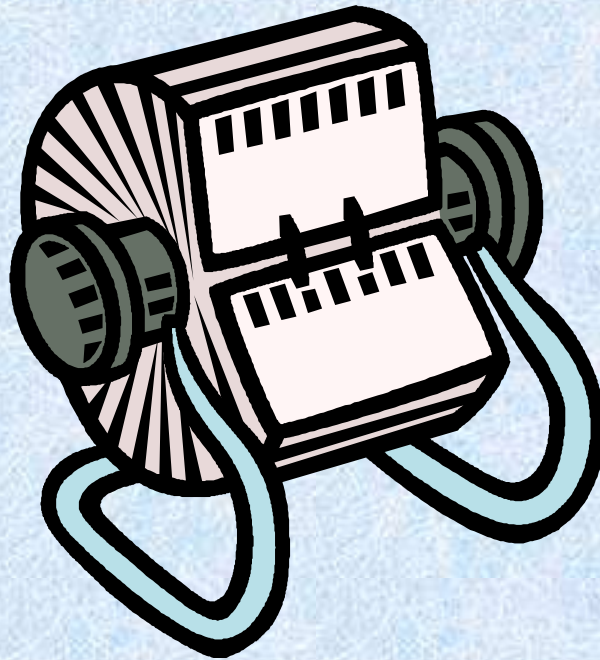


<http://www.arb.ca.gov/msprog/ordiesel/vdecssafety.htm>

Exemption Process

- Exemption will be reviewed by retrofit manufacturers / installers
- Vehicles that could be retrofit will not be exempt
- Vehicles that cannot be retrofit will be posted (multiple fleets will not all have to submit an exemption request)

Information and Contacts



California Environmental Protection Agency

Air Resources Board



Information and Contacts

Off-road Diesel Homepage: Reporting, Fleet
Average Calculator, Training Information

www.arb.ca.gov/ordiesel

Knowledge Center (FAQs, Advisories)

www.arb.ca.gov/msprog/ordiesel/knowcenter.htm

Help Line: (877) 59-DOORS

doors@arb.ca.gov